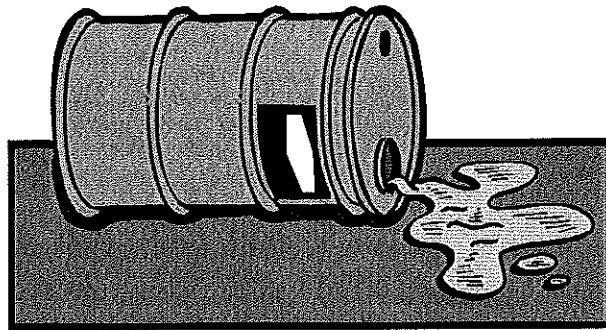


Hazardous Material Identification



Hazardous Material Identification System (HMIS) Label for Hazardous Material

Name of Material	
<input type="checkbox"/>	HEALTH
<input type="checkbox"/>	FLAMMABILITY
<input type="checkbox"/>	REACTIVITY
<input type="checkbox"/>	PROTECTIVE EQUIPMENT

HMIS-Hazardous Material Identification System is a labeling system developed by the National Paint and Coatings Association that uses letter, numbers, and symbols to communicate hazard information.

HMIG is a comprehensive hazard communication programme.

HMIG communicates hazard information to the use of colour, numbers, letter of alphabets and symbols. In this system health (blue), flammability (red) and reactivity (yellow) are coded with colour and numbers, whereas personal protective equipment (white) is with letter of alphabet and symbols.

The national fire protection association ('NFPA'- USA) has developed 'Fire Diamond' in which white section indicates fire protection. The national paints and coating association (NPCA-USA) has developed HMIS in which white section indicates personal protective equipment. All other sections like health (blue), flammability (red) and reactivity (yellow) remain same in both the systems. Laboratory chemicals are usually operated with limited quantities in small packing, which has a limited risk of fire and hence preference is given to protective equipment in HMIG in our labels.

Types of hazards. The HMIG is sub-divided into four general categories,

- **health (blue)**
- **flammability (red)**
- **reactivity (yellow)**
- **protective equipment (white)**



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Standard Interpretations

05/21/1987 - HMIS use in meeting the in-plant labeling requirements of the HCS.

[← Standard Interpretations - Table of Contents](#)

• Standard Number: 1910.1200(f)

May 21, 1987

Mr. J. Andrew Doyle
Counsel
National Paint & Coatings Association
1500 Rhode Island Avenue, N. W.
Washington, D.C. 20005

Dear Mr. Doyle:

This is in response to your letter of April 21 regarding the acceptability of the National Paint and Coatings Association's Hazardous Materials Information System (HMIS) for use in meeting the in-plant labeling requirements of the Hazard Communication Standard.

As you mention in your letter, page A-11 of Occupational Safety and Health Administration Instruction CPL 2-2.38A CH-1 states that "the intent of the standard is to permit the use of (numerical labeling systems) as long as the entire Hazard Communication Program is effective." Therefore, the use of the HMIS would be acceptable in meeting the in-plant labeling requirements of the standard. Of course, the system's user would need to correctly use the system (apply the correct numerical ratings) to be found in compliance.

In the case of shipped containers, a label must include the target organ effects. This information may be part of an additional label or added to the HMIS label. Also, in the case of shipped containers, the label must include the name and address of the chemical manufacturer, importer, or other responsible party.

If we can be of further assistance, please feel free to contact us again.

Sincerely,

Frank White
Deputy Assistant Secretary

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Occupational Safety & Health Administration
200 Constitution Avenue, NW
Washington, DC 20210

Labeling of Secondary Containers of Hazardous Materials Using the HMIS System

Definition of Secondary Container

A secondary container is a container, such as a squeeze bottle or flammable liquid storage can, filled with chemicals from primary containers and often used to store chemicals in or near a work area. Secondary containers shall be labeled whenever a chemical, hazardous or not, is transferred to a secondary container.

Purpose of Labeling Secondary Containers

The purpose of labeling secondary containers is to provide employees with the specific information regarding the physical and health hazards of chemicals (liquid or solid) in the work place. The primary container will contain this information; however, secondary containers, unless specifically purchased for the material to be stored, will not have the required information. The secondary label is to provide general information regarding the hazards of the chemicals and is to be used with the Material Hazard Data Sheets to as part of the facility's Hazard Communication Program. **A secondary container label is to give a clear sign to any staff, employee, or any person who may come in contact with a chemical to take special interest in the hazards of the chemical.**

A secondary container label is not required if the container is to be controlled and used by only one person for just one shift.

HMIS Labeling System

The recommended method of labeling secondary containers is the Hazard Material Information System (HMIS) developed by the National Paint and Coatings Association. HMIS uses letters, numbers, and symbols to communicate hazard information. HMIS labels can be purchased from safety equipment distributors and come in a variety of sizes.

The information required for the labels comes from the appropriate primary container and MSDS information for the material.

Name of Material	
<input type="checkbox"/>	HEALTH
<input type="checkbox"/>	FLAMMABILITY
<input type="checkbox"/>	REACTIVITY
<input type="checkbox"/>	PROTECTIVE EQUIPMENT

HMIS Label

Explanation of the HMIS® Ratings

HMIS® III - HEALTH HAZARD RATINGS

* Chronic Hazard	Chronic (long-term) health effects may result from repeated overexposure
0 Minimal Hazard	No significant risk to health
1 Slight Hazard	Irritation or minor reversible injury possible
2 Moderate Hazard	Temporary or minor injury may occur
3 Serious Hazard	Major injury likely unless prompt action is taken and medical treatment is given
4 Severe Hazard	Life-threatening, major or permanent damage may result from single or repeated overexposures

HMIS® III - FLAMMABILITY RATINGS

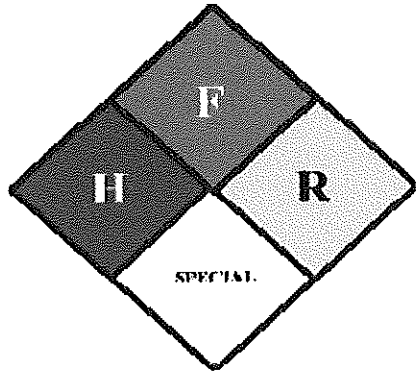
0 Minimal Hazard	Materials that will not burn
1 Slight Hazard	Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
2 Moderate Hazard	Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F. (Classes II & IIIA)
3 Serious Hazard	Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F, as well as liquids with flash points between 73 F and 100 F. (Classes IB & IC)
4 Severe Hazard	Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

HMIS® III - PHYSICAL HAZARD RATINGS

0 Minimal Hazard	Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
1 Slight Hazard	Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
2 Moderate Hazard	Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.
3 Serious Hazard	Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion
4 Severe Hazard	Materials that are readily capable of explosive water reaction, detonation or explosive decomposition, polymerization, or self-reaction at normal temperature and pressure.

Other Examples of Hazardous Materials Identification

Hazardous Materials Identification



Name of Material	
<input type="checkbox"/>	HEALTH
<input type="checkbox"/>	FLAMMABILITY
<input type="checkbox"/>	REACTIVITY
<input type="checkbox"/>	PROTECTIVE EQUIPMENT

HEALTH

- 4 Materials that, under emergency conditions, can be lethal.
- 3 Materials that, under emergency conditions, can cause serious or permanent injury.
- 2 Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
- 1 Materials that, under emergency conditions, can cause significant irritation.
- 0 Materials that, under emergency conditions, would offer no hazard.

REACTIVITY

- 4 Materials that in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperature and pressures, are shock sensitive and react explosively with water.
- 3 Materials that readily undergo violent chemical change at elevated temperatures and pressures. Also materials which may react violently with water or which may form potentially explosive mixtures with water.
- 2 Materials that in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react vigorously with water. Also materials that change or decompose with exposure to air, light or moisture
- 1 Materials that in themselves are capable of detonation or explosive reaction but require a strong initiating source or which must be heated under confinement
- 0 Materials that in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water. before initiation, are shock sensitive or which react explosively with water.

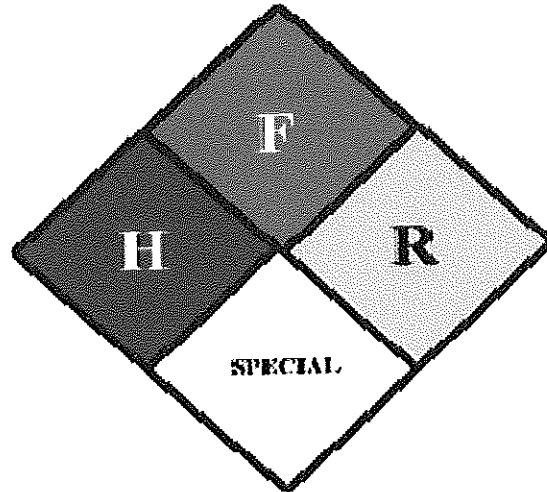
FLAMMABILITY

- 4 Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or which are readily dispersed in air and which will burn readily.
- 3 Liquids and solids that can be ignited under almost all ambient temperature conditions.
- 2 Materials that must be moderately heated or exposed to relatively high ambient temperature before ignition can occur.
- 1 Materials that must be preheated before ignition can occur
- 0 Materials that will not burn

Hazardous Materials Code Identification

Name of Material

<input type="checkbox"/>	HEALTH
<input type="checkbox"/>	FLAMMABILITY
<input type="checkbox"/>	REACTIVITY
<input type="checkbox"/>	PROTECTIVE EQUIPMENT



Health

Signal and Possible Injury

- 4 Materials that, under emergency conditions, can be lethal.
- 3 Materials that, under emergency conditions, can cause serious or permanent injury.
- 2 Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.
- 1 Materials that, under emergency conditions, can cause significant irritation.
- 0 Materials that, under emergency conditions, would offer no hazard.

Flammability

Signal and Susceptibility of Materials to Burning


- 4 Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or which are readily dispersed in air and which will burn readily.
- 3 Liquids and solids that can be ignited under almost all ambient temperature conditions.
- 2 Materials that must be moderately heated or exposed to relatively high ambient temperature before ignition can occur.
- 1 Material that must be preheated before ignition can occur.
- 0 Materials that will not burn.

Reactivity

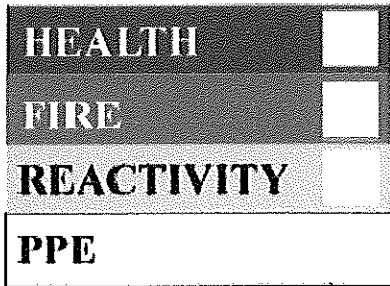
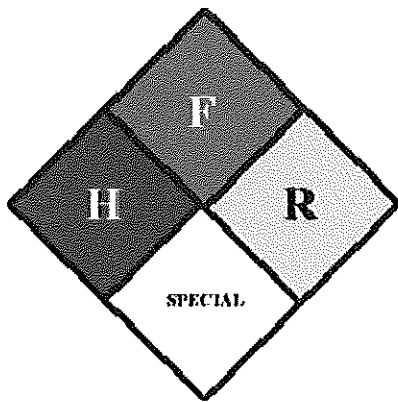
Signal and Susceptibility to Release of Energy

- 4 Materials that in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperature and pressures, are shock sensitive and react explosively with water.
- 3 Materials that in themselves are capable of detonation or explosive reaction but require a strong initiating source or which must be heated under confinement before initiation, are shock sensitive or which react explosively with water.
- 2 Materials that readily undergo violent chemical change at elevated temperatures and pressures. Also materials which may react violently with water or which may form potentially explosive mixtures with water.
- 1 Materials that in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react vigorously with water. Also materials that change or decompose with exposure to air, light or moisture.
- 0 Materials that in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

Special

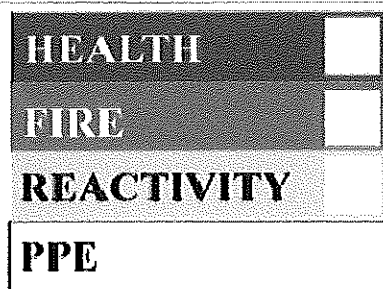
- W** Reacts violently or in a dangerous manner with water.
- D** Requires special disposal
- OX** Substance yields oxygen to support combustion. Reacts to oxidize fuels or combustibles.
- COR** Acid, alkali or other materials that will cause severe damage to living tissue.
-  **Materials possessing radioactivity hazards.**

Hazard Materials Label Identification Guide

Flammability Category	
4	Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or which are readily dispersed in air, and which will burn readily. This degree should include: <ul style="list-style-type: none"> • Gases; • Cryogenic materials; • Any liquid or gaseous material which is a liquid while under pressure and have a flash point below 73°F (22.8°C) and having a boiling point below 100°F (37.8°C). (Class IA flammable liquids.) • Materials which on account of their physical form or environmental conditions can form explosive mixtures with air and which are readily dispersed in air, such as dusts of combustible solids and mists of flammable or combustible liquid droplets.
3	Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions. This degree should include: <div style="display: flex; align-items: flex-start;"> <div style="flex: 1;">  </div> <div style="flex: 2;"> <ul style="list-style-type: none"> • Liquids having a flash point below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C) and those liquids having a flash point at or above 73°F (22.8°C) and below 100°F (37.8°C). (Class IB and Class IC flammable liquids); • Solid materials in the form of coarse dusts which may burn rapidly but which are generally do not form explosive atmospheres with air; • Solid materials in a fibrous or shredded form which may burn rapidly and create flash fire hazards, such as cotton, sisal and hemp; • Materials which burn with extreme rapidity, usually by reason of self-contained oxygen (e.g., dry nitrocellulose and <i>many organic peroxides</i>; • Materials which ignite spontaneously when exposed to air. </div> </div>
2	Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This degree should include: <ul style="list-style-type: none"> • Liquids having a flash point below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C) and those liquids having a flash point at or above 73°F (22.8°C) and below 100°F (37.8°C). (Class IB and Class IC flammable liquids); • Liquids having a flash point above 100°F (37.8°C), but not exceeding 200°F (93.4°F); • Solids and semisolids which readily give off flammable vapors.
1	Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature condition, before ignition and combustion can occur. This degree should include: <ul style="list-style-type: none"> • Materials which will burn in air when exposed to a temperature of 1500°F (815.5°C) for a period of 5 minutes or less; • Liquids, solids, and semisolids having a flash point above 200°F (93.4°C); • This degree includes most ordinary combustible materials.
0	Materials that will not burn. This degree should include any material which will not burn in air when exposed to a temperature of 1500°F (815.5°C) for a period of 5 minutes. <div style="display: flex; align-items: center;"> <div style="flex: 1;">  </div> <div style="flex: 2;"> <p style="text-align: center;">Reactivity Category</p> <div> <div>4</div> <div>Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This degree should include materials which are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.</div> </div> <div> <div>3</div> <div>Materials which in themselves are capable of detonation or of explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This degree should include materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.</div> </div> <div> <div>2</div> <div>Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This degree should include materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. It should also include those materials which may react violently with water or which may form potentially explosive mixtures with water.</div> </div> </div> </div>

Hazard Materials Label Identification Guide

PPE Recommendations			
A	safety glasses	O	face Shield
B	safety glasses, gloves	P	gloves
C	safety glasses, gloves, apron	Q	boots
D	face shield, gloves, apron	R	apron
E	safety glasses, gloves, dust respirator	S	full suit
F	safety glasses, gloves, apron, dust respirator	T	dust respirator
G	safety glasses, gloves, vapor respirator	U	vapor respirator
H	splash goggles, gloves, apron, dust respirator	W	dust and vapor respirator
I	safety glasses, gloves, dust and vapor respirator	X	consult supervisor or Standard Operating Procedure
J	splash goggles, gloves, apron, dust and vapor respirator	Y	full face respirator
K	airline hood/mask, gloves, full suit, boots	Z	airline hood/mask
N	splash goggles		





































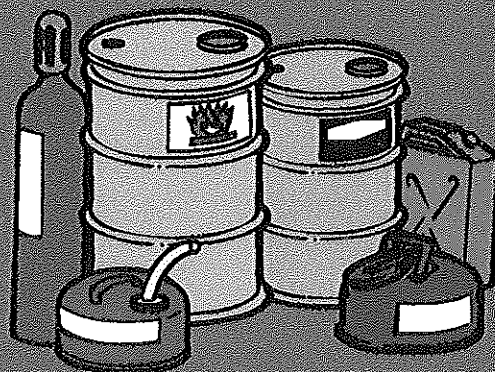
Hazard Materials Label Identification Guide

Reactivity Category Continued	
1	Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
0	Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

Health Category	
4	<p>Materials which upon very limited exposure could cause death or major residual injury even though prompt medical treatment is given, including those which are too dangerous to be approached without specialized protective equipment. This degree should include:</p> <ul style="list-style-type: none"> • Materials which can penetrate ordinary rubber protective clothing; • Materials which under normal conditions or under fire conditions give off gases which are extremely hazardous (i.e., toxic or corrosive) through inhalation or through contact with or absorption through the skin.
3	<p>Materials which upon short-term exposure could cause serious temporary or residual injury even though prompt medical treatment is given, including those requiring protection from all bodily contact. This degree should include:</p> <ul style="list-style-type: none"> • Materials giving off highly toxic combustion products; • Materials corrosive to living tissue or toxic by skin absorption.
2	<p>Materials which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given, including those requiring use of respiratory protective equipment with independent air supply. This degree should include:</p> <ul style="list-style-type: none"> • Materials giving off toxic combustion products; • Materials giving off highly irritating combustion products; • Materials which either under normal conditions or under fire conditions give off toxic vapors lacking warning properties.
1	<p>Materials which on exposure would cause irritation but only minor residual injury even if no treatment is given, including those which require use of an approved canister type gas mask. This degree should include:</p> <ul style="list-style-type: none"> • Materials which under fire conditions would give off irritating combustion products; • Materials which on the skin could cause irritation without destruction of tissue.
0	Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.

Special Category	
OX	Denotes materials that are oxidizing agents. These compounds give up oxygen easily, remove hydrogen from other compounds, or attract negative electrons.
W	Denotes materials that are water-reactive. These compounds undergo rapid energy releases on contact with water.

Symbol	Personal Protective Equipment (PPE) Required	
A		Safety Glasses
B	 	Safety Glasses Gloves
C	  	Safety Glasses Apron Gloves
D	  	Face Shield Apron Gloves
E	  	Safety Glasses Dust Respirator Gloves
F	   	Safety Glasses Dust Respirator Apron Gloves
G	  	Safety Glasses Vapor Respirator Gloves
H	   	Splash Goggles Vapor Respirator Apron Gloves
I	  	Safety Glasses Dust and Vapor Respirator Gloves
J	   	Splash Goggles Gloves Apron Dust and Vapor Respirator
K	   	Air Line Hood or Mask Boots Full Suit Gloves
X	Ask supervisor or safety specialist for handling instructions.	



DO'S AND DON'TS OF USING CHEMICAL LABELS

DO:

- *Read the label before starting to work with the chemical or material.
- *Follow the warning instructions on the label.
- *Understand the color- and number- coding system on labels.
- *Read and follow label guidelines for consumer products (such as cleaners and pesticides)
- *Report containers with missing, covered or illegible labels to a supervisor.
- *Put labels on portable containers of hazardous chemicals.
- *Consult the MSDS as well as the label for complete information about the chemical or material.

DO NOT:

- *Use any container that does not have a label or if you can not read the label.
- *Ignore safety warnings on the label.
- *Work with a chemical or material if you do not understand the information on the label.

**REMEMBER-IF YOU NEED HELP
UNDERSTANDING INFORMATION ON A
LABEL, AS YOUR SUPERVISOR!**

